THE SMART PROJECT: A FOCUS ON FRUIT TREES AND VEGETABLES AGROFORESTRY SYSTEMS IN FRANCE

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Introduction

If agroforestry systems combining fruit trees and annual crops are very well developed and studied in tropical countries, they have been forgotten or, at least neglected, in France and Europe for the last 40 years. Current trends and challenges in agriculture (land access issue, need of periurban agricultural forms, use of functional biodiversity to face the necessary input reduction, crop diversification…) lead some French small farmers to combine annual plants and fruits within the same field, with the objective to increase their field performances and ensure the multifunctionality of their systems. The number of such agroforestry systems has increased significantly especially during the past few years.

Objectives and approach

The SMART project started in 2014 and aims to:
1. Identify and geolocalize these agroforestry farmers (Figure 1);
2. Better understand farmers' motivations and choices;
3. Unravel the biological interactions between fruit trees and vegetables in farmer's plots
4. Share and stimulate information among members of the network.

The SMART project is a co-operation of 16 partners located in three French regions.

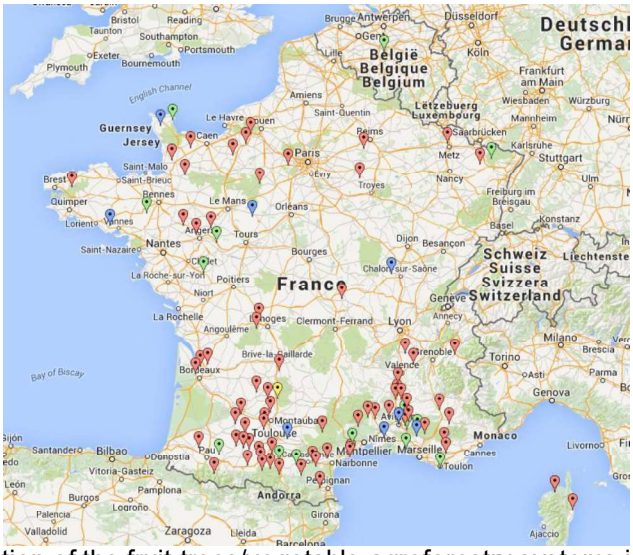

Figure 1. Geolocalization of the fruit trees/vegetable agroforestry systems identified in France

First results and perspectives

An open online survey (http://doiop.com/inventaire_smart) has been carried out in 2013-2014, and resulted in a typology of agroforestry systems with fruits. This survey is still undergoing, to gather new initiatives. To date, about 150 different systems have been identified.

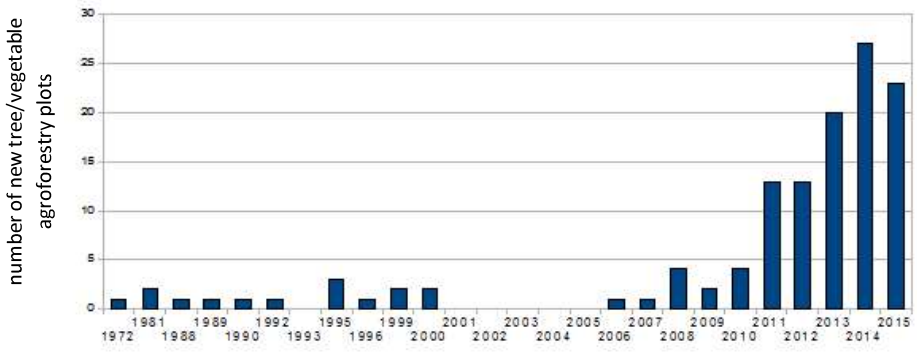

Figure 2. Evolution of the number of new agroforestry fields combining fruit trees and annual crops in France

The most relevant systems have been selected for more complete interviews conducted in 2014, in order to select 40 farms in three contrasted regions of France (South-East, South-West, North-West) surveyed more intensively. Based on farmer interviews, the priorities of farmers in terms of performance characterization concerned: (i) biodiversity, (ii) socio-economic sustainability, (iii) interactions between trees and annual crops. To address these requests, simple indicators have been discussed, shared or selected together with farmers in the very beginning of 2015. The field booklet is available for download on the project web site (www.agroforesterie.fr/smart).
To date, the contribution of the SMART project consisted in establishing link between farmers in France, also with students, future farmers interested in agroforestry principles. For example many reports (in French) of field trips organized in the frame of the SMART project are available online (www.ad-mediterranee.org/RessourcesAgroforesterie). Different tools (design support tool, farm descriptions, farmers testimonies...) will be built and published in 2016 and 2017, in order to promote knowledge sharing and network activity. The collection of field data begun in 2015 and will be pursued in 2016. We assume that the dynamics launched among farmers and other stakeholders could be pursued after the end of the SMART project, scheduled for June 2017. Simple assessment tools should then be displayed in a way that allows farmers to further interact and keep track of each other's performances regarding agroforestry.

Testimonies of two fruit tree-vegetable agroforestry farmers involved in the SMART project:

- **Odile Sarrazin**

My agroforestry garden is located in Marseillan in the South of France (Herault) in a vineyard landscape. The vegetable growing under the olive took place gradually since 2009, on a total area of 0.72 ha. One person works at full time. At the beginning of the activity, trees were already 10 years-old. The absence of electricity in the garden does not allow automatization of irrigation which is a major constraint in the summer since the draining soil requires regular watering. My main objective is to develop a low input and fossil energy system. For this, I use natural resources that I found nearby (prunings, marine resources) for mulching and soil-enrichment. The breeding-substrat I use mainly comes from home-made vermicompost. I harvest my own farm seeds (tomato, pepper, eggplant, cucumber, lettuce, zucchini, chard, beans, etc.). The grass strips are considered as a natural resource. In the middle of the strip, vegetation is leaved high all the season. Only the borders are reduced with a Rotofil intervention to allow walking for the harvest. In the next years, I consider to increase the cropped biodiversity with other fruits than olives, berries and grapevines.

Strengths of my system: Little or no chemical treatments, reduced pressure of pests (voles, rabbits, ants, snails), very few inputs, educational workshops, more pleasant working environment
Weak points: Not enough cultivated area for long rotations, impossibility to mechanize, no electricity, the profitability is insufficient…

Figure 3: Picture of Odile Sarrazin's system

- **Jérôme Dehondt ("Ferme des Petits Pas")**

The "Petits Pas" farm was created based on the principles of permaculture. The main activity of the farm is organic and diversified vegetable gardening. Some of the fields are conducted in agroforestry with fruit trees, which were planted in order to diversify the production. The farm also produces berries, medicinal and aromatic plants, and cereal and fodder crops. The objective is to produce on a little surface and with the wish to be as autonomous as possible.